

# CCSDS Standards

## CCSDS overview

Dr. Osvaldo Peinado

CCSDS WG-Member

DLR-Oberpfaffenhofen

RB-KB

+49 8153-28-3232

[Osvaldo.Peinado@dlr.de](mailto:Osvaldo.Peinado@dlr.de)

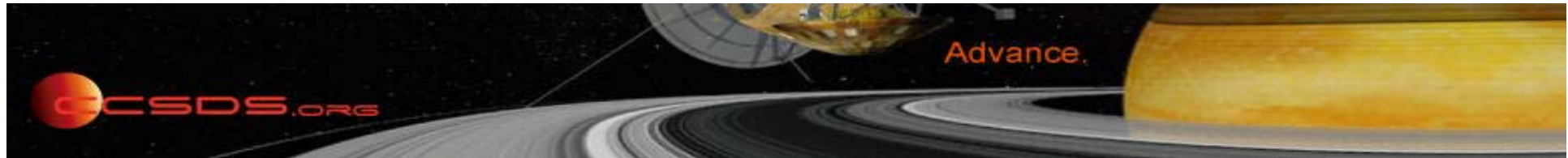
June 2010

## CCSDS Overview

- **Organization,**
- **Standardizations Topics,**
- **Book coloring**

# CCSDS Standards

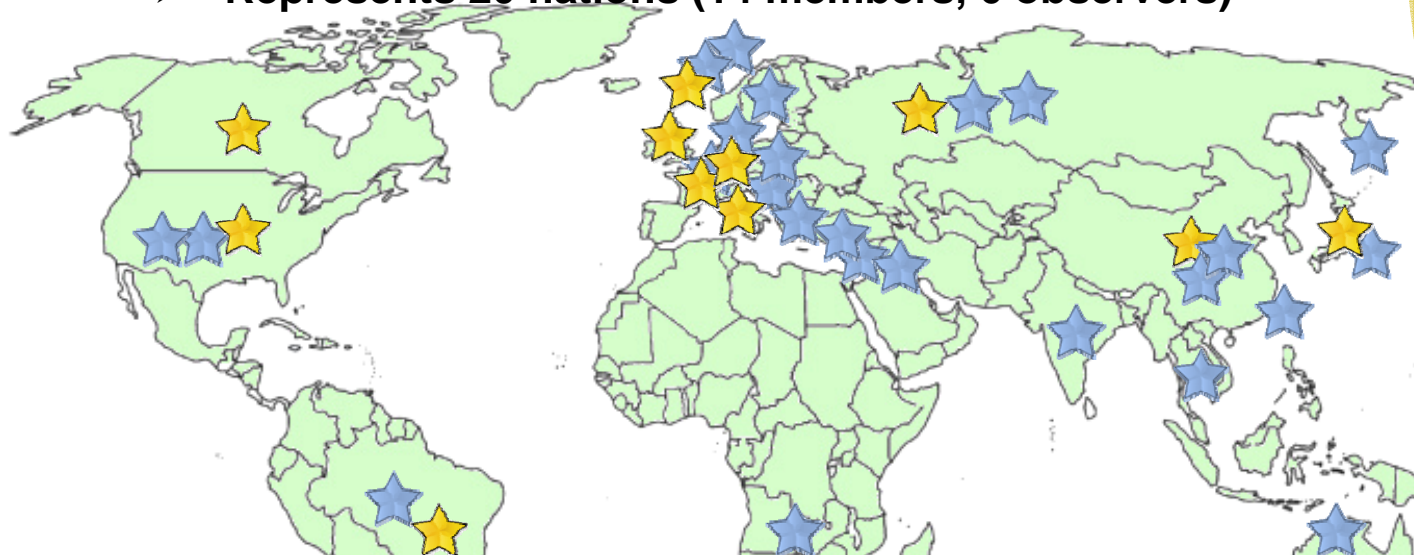
## CCSDS Overview



- The goal: For Space Data Systems, enhance interoperability and timeliness, and to support the needs of agencies, to support the needs of agencies, to support the needs of agencies,
  - International operations, to support the needs of agencies, to support the needs of agencies,
  - CCSDS provides a set of standards, to support the needs of agencies, to support the needs of agencies,
  - Standards are developed by the CCSDS, to support the needs of agencies, to support the needs of agencies,
- 
- (architecture, archive, security, XML exchange formats, etc.)

## CCSDS Overview

- **Produces International Voluntary Consensus Standards**
- **Agency-led international committee**
  - Currently 11 Member agencies
  - Currently 26 Observer Agencies
  - Currently 136 Commercial Associates
  - ~180 workers at the Spring 10 Technical meeting
- **Also functions as an ISO Committee**
  - TC20/SC13 - Space Data & Info Transfer Systems
  - Represents 20 nations (14 members, 6 observers)



- OBSERVER AGENCIES**
- ASA/Austria  
BFSP0/Belgium  
CAS/China  
CAST/China  
CSIR/South Africa  
CSIRO/Australia  
CTA/Brazil  
DNSC/Denmark  
EUMETSAT/Europe  
EUTELSAT/Europe  
GISTDA/Thailand  
HNSC/Greece  
IKI/Russia  
ISRO/India  
KARI/Korea  
KFKI/Hungary  
MOC/Israel  
NCST/USA  
NICT/Japan  
NOAA/USA  
NSPO/Taipei  
SSC/Sweden  
SUPARCO/Pakistan  
TsNIIMash/Russia  
TUBITAK/Turkey  
USGS/USA
- MEMBER AGENCIES**
- ASI/Italy  
BNSC/UK  
CNES/France  
CNSA/China  
CSA/Canada  
DLR/Germany  
ESA/Europe  
FSA/Russia  
INPE/Brazil  
JAXA/Japan  
NASA/USA

# CCSDS Standards

## CCSDS Overview

### ➤ Participation

#### ➤ **Agencies:** become member or observer

Member agencies fully participates in all CCSDS activities and provides a commensurate level of support. Only one agency per country (+ESA), voting rights in the CMC.

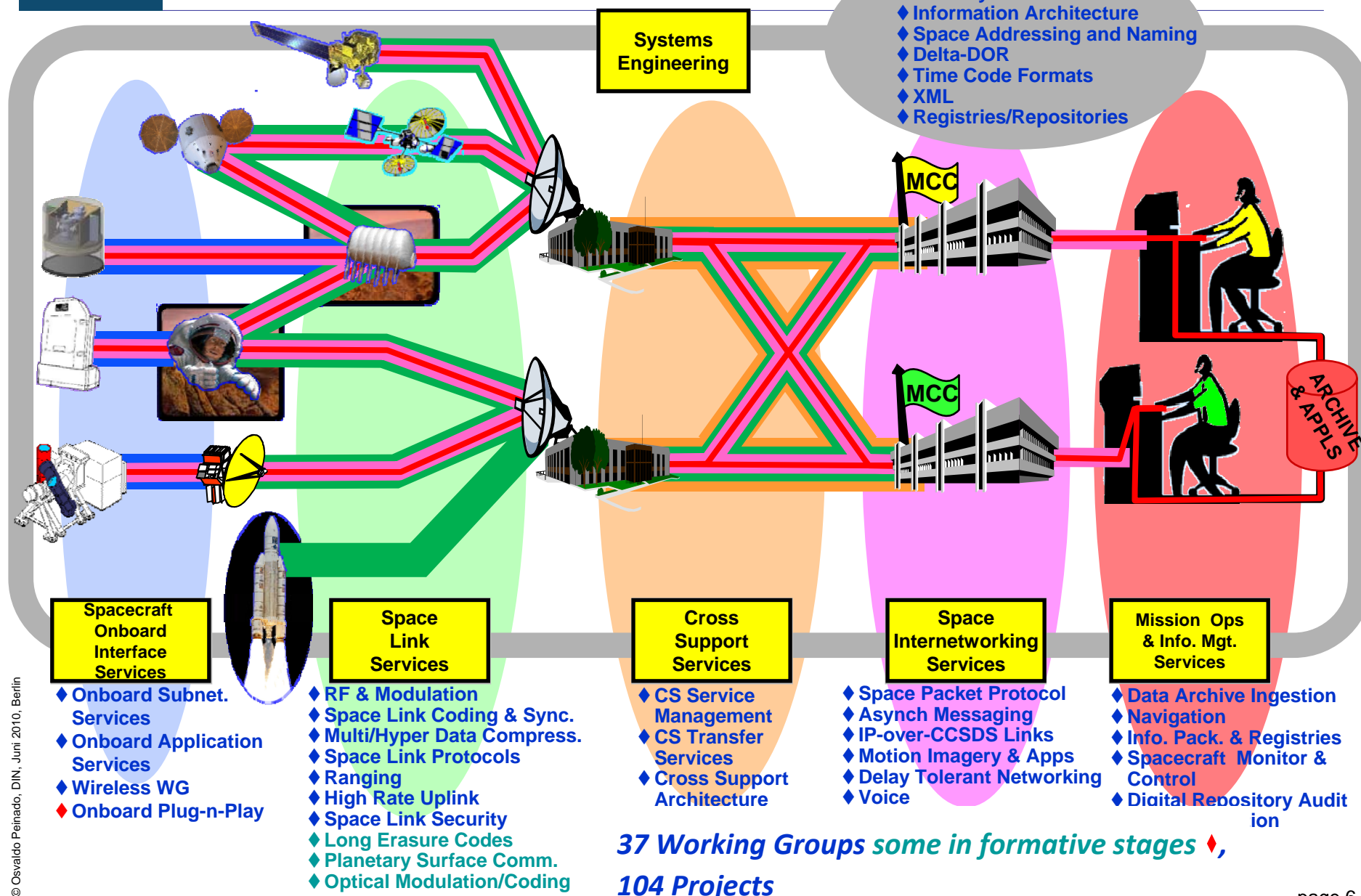
#### ➤ **Industry:** become a Commercial Associate

participation in the working groups is organized under the umbrella of your national agency

CCSDS Associates are scientific and industrial entities desiring a formal tie with the CCSDS, which allows them to more closely monitor and possibly influence the technical document development process.

# CCSDS Standards

## CCSDS Overview



**37 Working Groups some in formative stages** ♦  
**104 Projects**



### FLOW OF GUIDANCE / REQUIREMENTS

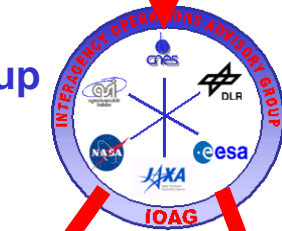
(Note: Agency makeup varies between these groups)

**IOP:**

**Interoperability  
Plenary** – highest  
space agency  
agreements on  
interoperability



**IOAG: Interagency  
Ops Advisory Group**  
interoperable  
mission support  
infrastructure



**CCSDS:** open  
international  
standards for  
space mission  
interoperability

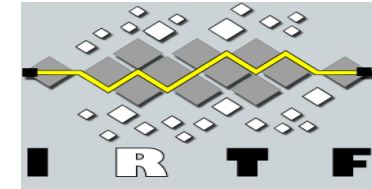


**SFCG:** space  
agency frequency  
management  
forum

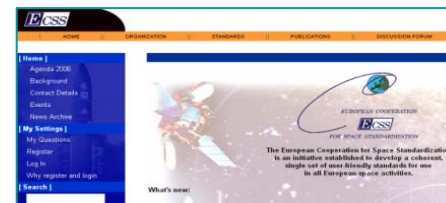
### PEER ORGANIZATIONAL RELATIONSHIPS



**OMG: Object  
Management Group:**  
industry standards for  
exchange of application  
information among  
vendor products



**IETF/IRTF:** open  
international standards  
for IP suite and  
Disruption Tolerant  
Networking (DTN)



**ECSS: European  
Consortium for Space  
Standards - European  
regional standards for  
space mission support**



**AIAA: North American  
regional standards for  
space mission  
support**

# CCSDS Standards

## CCSDS Overview



### Review Documents

### Review Documents



An important success factor of CCSDS is the role of formal Agency review. The vehicle for such review is the 'Review Item Disposition' or 'RID'. When a document requires formal review, the Secretariat announces the review opportunity to the CCSDS Agencies and provides instructions that define how, when, and to whom the Agency comments (in the form of completed RIDs) are to be submitted.

Anyone is welcomed to provide comments on the draft recommendations below.

For questions, please contact the CCSDS Secretariat [secretariat@mailman.ccsds.org](mailto:secretariat@mailman.ccsds.org).

### Currently in Review

	Document #	Document Name	Type	Date	Issue	Comments Due By
<a href="#">Click Here to Review</a>	CCSDS 502.0-P-1.1	Orbit Data Messages	Pink Book	07/2008	1.1	9/23/2008

### Recently Completed Reviews

	Document #	Document Name	Type	Date	Issue	Comments Due By
<a href="#">Click Here to Review</a>	CCSDS 910.11-R-2	Space Link Extension-Service Management--Service Specification	Red Book	03/2008	2	6/5/2008
<a href="#">Click Here to Review</a>	CCSDS 521.1-R-1	Spacecraft Monitor and Control--Common Services	Red Book	09/2007	1	11/30/2007
<a href="#">Click Here to Review</a>	CCSDS 522.0-R-1	Spacecraft Monitor and Control--Core Services	Red Book	09/2007	1	11/30/2007
<a href="#">Click Here to Review</a>	CCSDS 521.0-R-1	Spacecraft Monitor and Control--Message Abstraction Layer	Red Book	07/2007	1	9/21/2007
<a href="#">Click Here to Review</a>	CCSDS 851.0-R-1, 852.0-R-1	Spacecraft Onboard Interface Services	Red Book	06/2007	1	9/14/2007





# CCSDS Standards

## CCSDS Overview



[CCSDS.org](#) [CWE Home](#) [SEA Home](#) [MOIMS Home](#) [CSS Home](#) [SOIS Home](#) [SLS Home](#) [SIS Home](#) [CESG Home](#) [CMC Home](#) [Secretariat](#)

### Welcome to the CCSDS Collaborative Work Environment (CWE)

The interactive graph to the right represents the CCSDS Technical Organization. The CCSDS Engineering Group (CESG) is composed of 6 areas. Within these areas there are Working Groups (WG), Birds of a Feather (BOF), and Special Interest Groups (SIG) that collaborate.

To access more information please click on the CMC, CESG, Area, WG, or BOF name.

To review the status of documents and projects being developed in these WGs, [Click Here](#).

### CCSDS Technical Organization

#### CCSDS Management Council (CMC)

General Secretary: Mike Kearney

[CMC DOCUMENTS](#)

[CMC POLLS](#)

#### CCSDS Engineering Steering Group (CESG)

CESG Chair: Adrian Hooke

[CESG DOCUMENTS](#)

[CESG POLLS](#)

#### Systems Engineering Area (SEA)

AD: Peter M. Shames

[SEA DOCUMENTS](#)

##### Systems Architecture Working Group (SEA-SA)

Chair: Takahiro Yamada

##### Information Architecture Working Group (SEA-IA)

Chair: Daniel J. Crichton

##### Security Working Group (SEA-SEC)

Chair: Howard Weiss

##### SEA SANA Working Group (SEA-SANA)

Chair: Marc

#### Mission Operations and Information Management Services Area (MOIMS)

AD: Nestor Peccia

[MOIMS DOCUMENTS](#)

##### Data Archive Ingestion Working Group (MOIMS-DAI)

Chair: John Garrett

##### Navigation Working Group (MOIMS-NAV)

Chair: David Berry

##### Information Packaging & Registries Working Group (MOIMS-IPR)

Chair: Louis I. Reich

##### Spacecraft Monitor and Control Working Group (MOIMS-SM&C)

Chair: Mario Merri

#### Cross Support Services Area (CSS)

AD: Erik Barkley

[CSS DOCUMENTS](#)

##### Service Management Working Group (CSS-SM)

Chair: Erik Barkley

##### Transfer Services Working Group (CSS-CSTS)

Chair: Yves Doat

##### Cross Support Space Communications Architecture Working Group (CSS-CSA)

Chair: Takahiro Yamada

#### Spacecraft Onboard Interface Services Area (SOIS)

AD: Chris Taylor

[SOIS DOCUMENTS](#)

##### Subnetwork Services Working Group (SOIS-SUBNET)

Chair: Chris Taylor

##### Application Support Services Working Group (SOIS-APP)

Chair: Stuart Fowell

##### Onboard Wireless Working Group (SOIS-WIR)

Chair: Patrick Plancke

[Onboard Plug &](#)

#### Space Link Services Area (SLS)

AD: Jean-Luc Gerner

[SLS DOCUMENTS](#)

##### RF Modulation Working Group (SLS-RFM)

Chair: Enrico Vassallo

##### Space Link Coding and Synchronization Working Group (SLS-C&S)

Chair: Gian Paolo Calzolari

##### Multispectral Hyperspectral Data Compression Working Group (SLS-MHDC)

Chair: Aaron Kiely

##### Space Link Protocols Working Group (SLS-SLP)

Chair: Greg Kazz

[Baseline](#)

#### Space Internetworking Services Area (SIS)

AD: Robert Durst

[SIS DOCUMENTS](#)

##### Packet Protocol Working Group (SIS-SPP)

Chair: Dai Stanton

##### Asynchronous Message Service Working Group (SIS-AMS)

Chair: Scott C. Burleigh

##### IP Over CCSDS Working Group (SIS-IPO)

Chair: Greg Kaz

##### Motion Imagery and Applications Working

[Group](#)

### ★ new work areas:

- ✧ Optical channel coding  
(in Space Link Services area)
- ✧ Super BOF (CCSDS architecture)
- ✧ Space Data Link Security

# CCSDS Standards

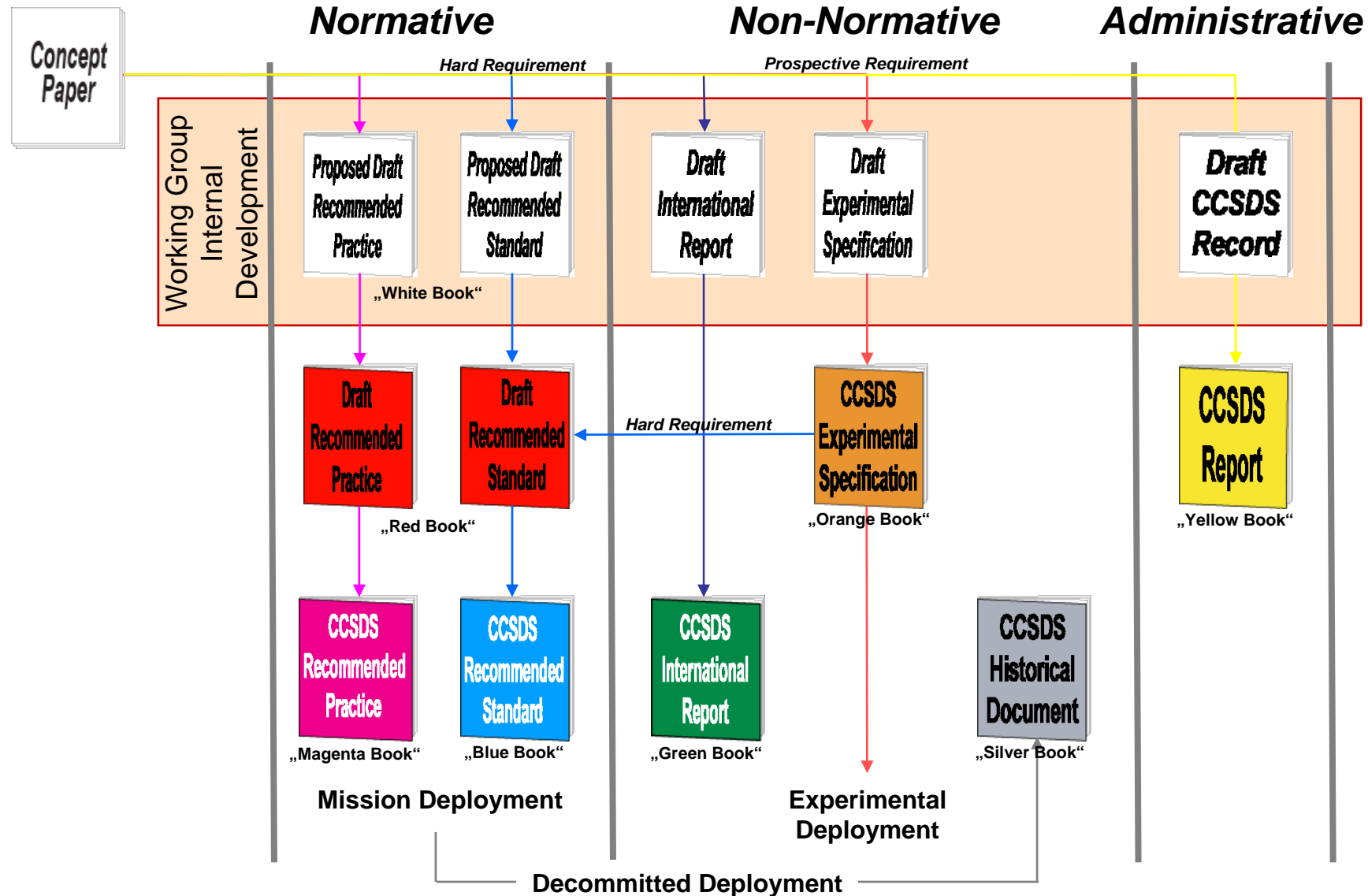
## CCSDS Overview

- Latest Membership news
  - China just accepted for full membership
  - Turkey just applied for observer membership
  
- Next meeting: London, end of October 2010.
  - Visit [www.ccsds.org](http://www.ccsds.org) for info.



## CCSDS Publications

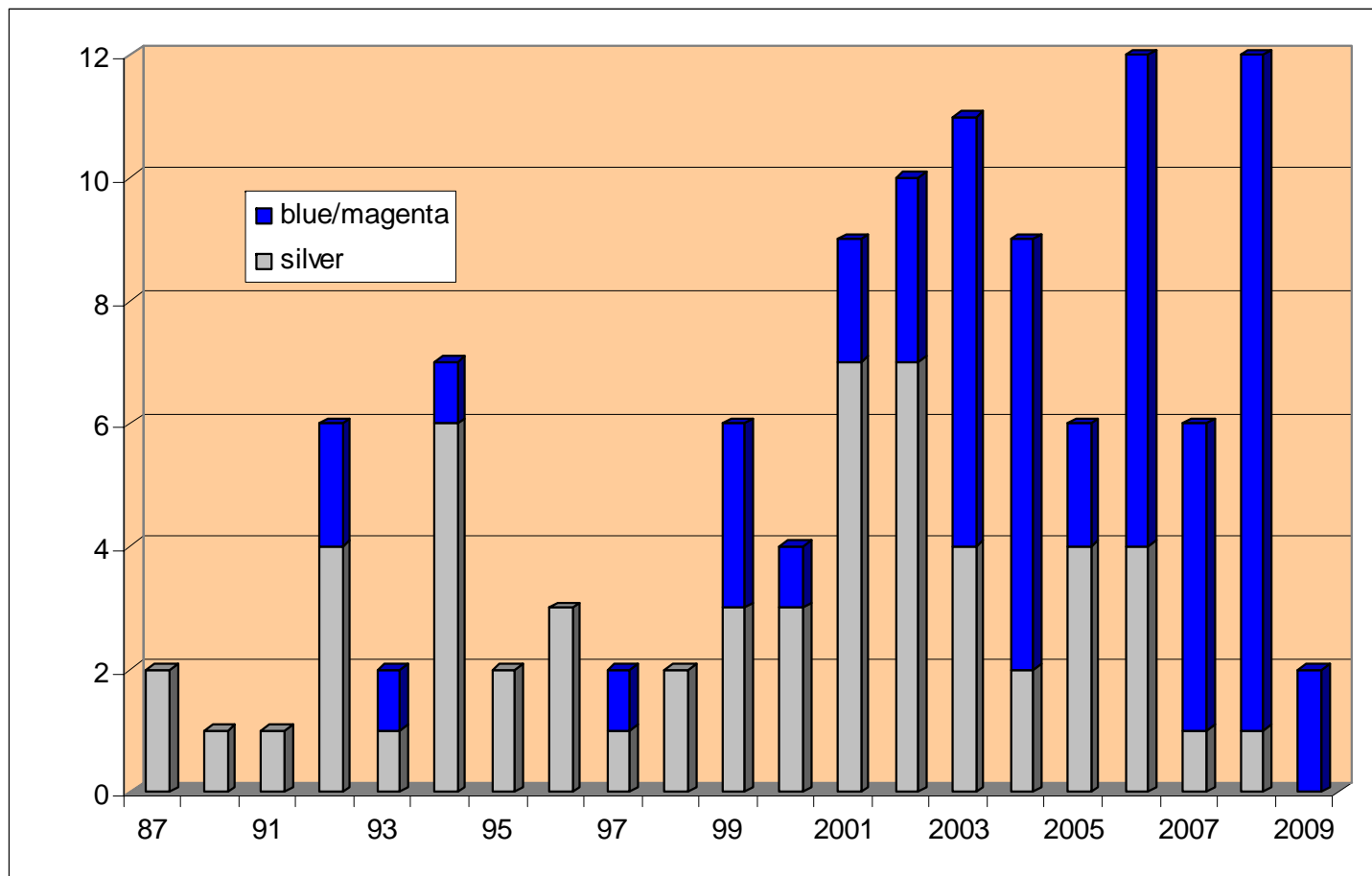
- Layout defined in the publications manual A20.0-Y-2
- Coloring and development process described in A02.1-Y-2.1
  - **Blue** Recommended Standard
  - **Magenta** Recommended Practice
  - **Pink Sheets** Proposed Revised Recommendation
  - **Green** International Reports
  - **Yellow** Administrative Documents
  - **Orange** Experimental
  - **White** Working
  - **Red** Draft Recommendation
  - **Silver** Historical





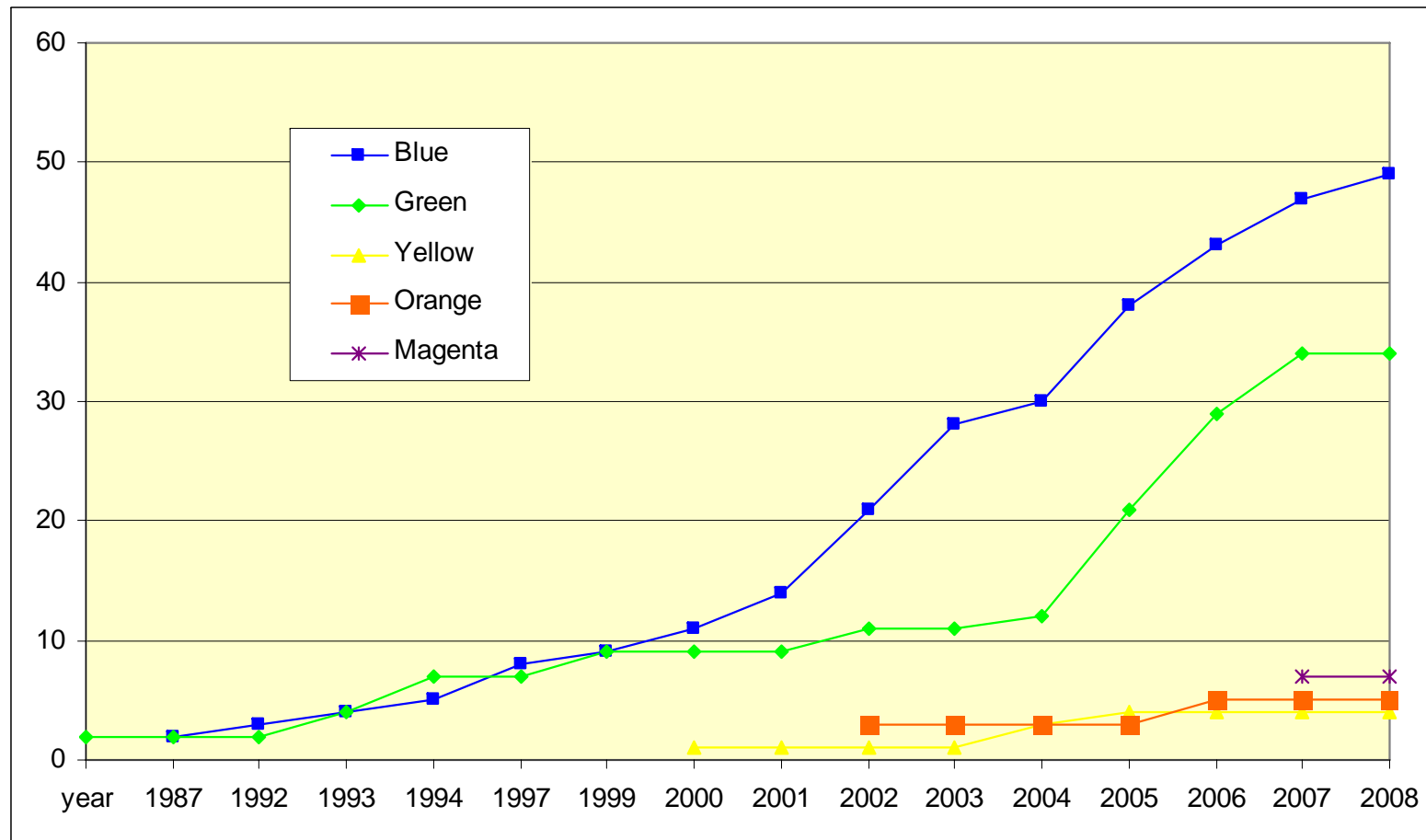
## CCSDS Overview

### Creation Date of CCSDS Standards



## CCSDS Overview

### Document development within CCSDS



**DANKE für ihrer Aufmerksamkeit !**